Amendments to the Claims:

Please amend Claim 1 and add new Claim 7-19 as follows:

1. (currently amended) A data communication link comprising a data transmitter station coupled by an optical communication channel to a data receiver station,

wherein the data transmitter station includes a multi-power-level optical source connected to receive data words of n digital bits, wherein said data transmitter encodes ~~and arranged to encode~~ different value words in the data word into different power levels of a ~~single~~ signal having m optical power levels, where m is greater than two, wherein different sequences of bits comprised of more than one bit are encoded into different power levels of the signal, wherein said data transmitter transmits the multi-power-level output signal of the optical source ~~being transmitted~~ along the optical communications channel to the data receiver station, said data receiver station including a data-decoding receiver arranged to receive and decode said multi-power level ~~single~~ signal into n bit digital words,

and wherein said receiver station further comprises a received-signal condition monitor coupled by a control channel to a control device located in the data transmitter station, said condition monitor being arranged to sense the level of a predetermined characteristic of each of the power levels of the multi-power-level output signal received by the data-decoding receiver and consequently to transmit ~~a~~ control signals along the control channel to the control device to adjust the laser drive current for each of the power levels to provide adequate bit error rate for each of the power levels used to transmit the multi-power-level output signal,

said control device being adapted to control the power output of the optical source for each power level consistent with achieving a predetermined sensed level of said predetermined characteristic for each power level used to transmit the multi-power-level output signal.

2. (original) A data communication link as claimed in claim 1, wherein the predetermined characteristic is the DC level or the average optical power level of the signal received by the receiver, the sensed level being compared against a control or reference level to

establish a difference and the arrangement is such that the control signal attempts to null that difference or a least to keep the difference within narrow predetermined limits.

3. (original) A data communication link as claimed in claim 1, wherein the predetermined characteristic is the individual bit content of a multibit test word transmitted at preselected times the condition monitor being preprogrammed with the bits of the test word against which the individual bits of the transmitted test word are compared and in the event of a difference the control signal is arranged to increase or decrease the power output of the transmitter in order to reduce the error.

4. (original) A data communication link as claimed in claim 1, wherein the control channel is any of:

a serial binary digital optical channel;

a parallel binary digital optical channel;

a serial binary digital electrical channel;

a parallel binary digital electrical channel;

a serial multilevel digital electrical channel;

a parallel multilevel digital electrical channel;

or an analog electrical channel.

5. (original) A data communication link as claimed in claim 1, wherein the bandwidth of the optical channel is the same as or greater than that of the control channel.

6. (previously presented) A data communication link as claimed in claim 1, wherein the optical source is a laser or an LED and the drive current supplied to the optical source is tailored to the characteristics of the source by individually adjusting the current drive levels such that each of the optical power levels is sufficiently separated from the levels above and below it for the receiver to quantize each level and maintain an adequate bit error rate, thus accommodating non linear source output power versus drive current characteristics.

7. (new) A data communication link as claimed in claim 1, wherein said communication channel and control channel are the same channel.

8. (new) A data communication link comprising a data transmitter station coupled by an optical communication channel to a data receiver station,

wherein the data transmitter station includes a multi-power-level optical source connected to receive data words of n digital bits, wherein said data transmitter encodes different value words in the data word into different power levels of a signal having m optical power levels, where m is greater than two, wherein different sequences of bits comprised of more than one bit are encoded into different power levels of the signal, wherein more than one bit may be encoded into the same power level, wherein said data transmitter transmits the multi-power-level output signal of the optical source along the optical communications channel to the data receiver station, said data receiver station including a data-decoding receiver arranged to receive and decode said multi-power level signal into n bit digital words,

and wherein said receiver station further comprises a received-signal condition monitor coupled by a control channel to a control device located in the data transmitter station, said condition monitor being arranged to sense the level of a predetermined characteristic of each of the power levels of the multi-power-level output signal received by the data-decoding receiver and consequently to transmit a control signals along the control channel to the control device to adjust the laser drive current for each of the power levels to provide adequate bit error rate for each of the power levels used to transmit the multi-power-level output signal,

said control device being adapted to control the power output of the optical source for each power level consistent with achieving a predetermined sensed level of said predetermined characteristic for each power level used to transmit the multi-power-level output signal.

9. (new) A data communication link as claimed in claim 8, wherein the predetermined characteristic is the DC level or the average optical power level of the signal received by the receiver, the sensed level being compared against a control or reference level to establish a difference and the arrangement is such that the control signal attempts to null that difference or a least to keep the difference within narrow predetermined limits.

10. (new) A data communication link as claimed in claim 8, wherein the predetermined characteristic is the individual bit content of a multibit test word transmitted at preselected times the condition monitor being preprogrammed with the bits of the test word against which the individual bits of the transmitted test word are compared and in the event of a difference the control signal is arranged to increase or decrease the power output of the transmitter in order to reduce the error.

11. (new) A data communication link as claimed in claim 8, wherein the control channel is any of:

a serial binary digital optical channel;

a parallel binary digital optical channel;

a serial binary digital electrical channel;

a parallel binary digital electrical channel;

a serial multilevel digital electrical channel;

a parallel multilevel digital electrical channel;

or an analog electrical channel.

12. (new) A data communication link as claimed in claim 8, wherein the bandwidth of the optical channel is the same as or greater than that of the control channel.

13. (new) A data communication link as claimed in claim 8, wherein the optical source is a laser or an LED and the drive current supplied to the optical source is tailored to the characteristics of the source by individually adjusting the current drive levels such that each of the optical power levels is sufficiently separated from the levels above and below it for the receiver to quantize each level and maintain an adequate bit error rate, thus accommodating non linear source output power versus drive current characteristics.

14. (new) A data communication link comprising a data transmitter station coupled by an optical communication channel to a data receiver station,

wherein the data transmitter station includes a multi-power-level optical source capable of transmitting signals at m optical power levels, where m is greater than two, wherein said data

transmitter transmits the multi-power-level output signal of the optical source along the optical communications channel to the data receiver station, said data receiver station including a data-decoding receiver arranged to receive and decode said multi-power level signal,

and wherein said receiver station further comprises a received-signal condition monitor coupled by a control channel to a control device located in the data transmitter station, said condition monitor being arranged to sense the level of a predetermined characteristic of each of the power levels of the multi-power-level output signal received by the data-decoding receiver and consequently to transmit control signals along the control channel to the control device,

said control device being adapted to control the laser drive current levels such that each of the optical power levels is sufficiently separated from the levels above and below it for the receiver to quantize each level and maintain an adequate bit error rate, thus accommodating non linear source output power versus drive current characteristics.

15. (new) A data communication link as claimed in claim 14, wherein the predetermined characteristic is the DC level or the average optical power level of the signal received by the receiver, the sensed level being compared against a control or reference level to establish a difference and the arrangement is such that the control signal attempts to null that difference or a least to keep the difference within narrow predetermined limits.

16. (new) A data communication link as claimed in claim 14, wherein the predetermined characteristic is the individual bit content of a multibit test word transmitted at preselected times the condition monitor being preprogrammed with the bits of the test word against which the individual bits of the transmitted test word are compared and in the event of a difference the control signal is arranged to increase or decrease the power output of the transmitter in order to reduce the error.

17. (new) A data communication link as claimed in claim 14, wherein the control channel is any of:

a serial binary digital optical channel;

a parallel binary digital optical channel;

a serial binary digital electrical channel;

a parallel binary digital electrical channel;

a serial multilevel digital electrical channel;

a parallel multilevel digital electrical channel;

or an analog electrical channel.

18. (new) A data communication link as claimed in claim 14, wherein the bandwidth of the optical channel is the same as or greater than that of the control channel.

19. (new) A data communication link as claimed in claim 14, wherein said communication channel and control channel are the same channel.